

of them have the keel as rounded as in *O. s. depressa* (Ckl.) and some have the color bands well developed. A striking feature of this district is the number of albinos occurring in both *pygmaea* and *obscura*. Another unusual feature is the occurrence of three forms of *Oreohelix* intermingled. It is seldom that I have found even two together until the season of 1917, and never before have I found three together, yet at all of the stations in White Creek Canyon this occurs. These stations are really different portions of one great colony, as scattered dead shells were found all along the canyon as far as we traversed it, but we divided it into stations because of differences in cover and other conditions, and variance in the proportionate numbers of the several forms.

A NEW PRIOTROCHATILLA FROM THE ISLE OF PINES, CUBA.

BY WM. F. CLAPP.

PRIOTROCHATILLA TORREI, n. sp.

Shell depressed, trochiform, thin, fragile, above with numerous oblique plications, crossed by raised spiral lines; below smooth; whorls, nine, the first smooth, white, the spiral lines beginning on the fourth. Suture of early whorls simple, of later whorls denticulate, and of the last two or three whorls covered with a white moderately denticulate flange. Last whorl descending slightly, aperture very oblique. Color yellow, with irregular white patches and white denticulate sutural flange above, uniform yellow below.

Greatest diam. 13 mm., l. d. $11\frac{1}{2}$ mm., alt. 8 mm. Type in Museum of Comparative Zoölogy, Cambridge, Massachusetts. No. 36888.

This species was discovered by Mr. W. S. Brooks near the southern end on the eastern face of the Sierra de Casas, Isle of Pines, Cuba, and later a large series was collected by Mr. Brooks and Dr. Thomas Barbour.

No genus of the great host of West Indian land mollusks is so famed for its beauty and delicacy of structure as *Priotrochatilla*. Hitherto but two well-defined species have been known,

and it is indeed rare good fortune to be able now to associate with a third the name of Dr. Carlos de la Torre of the University of Havana. No one has shown a keener or more sympathetic appreciation for, or knowledge of, the shells of his native land than has he.

P. torrei differs from the two species of *Prietrochatella* previously described, *P. constellata* Morelet and *P. stellata* Velasquez, in having the base of the shell smooth, instead of granulose as in *P. constellata*, or with transverse plications as in *P. stellata*. The sutural flange is less coarsely denticulate than in *constellata*, more strongly than in *stellata*. In *P. constellata* the average number of teeth on the periphery of the last whorl is less than 40, in *P. torrei* between 40 and 50, and in *P. stellata* more than 50. *P. constellata* Morelet,¹ was described as from "Sierra de Cristalles." In the southern part of the Isle of Pines there is a hill called the Sierra de Cristales, but the entire local formation is igneous and therefore this certainly was not the type locality of the species. It is possible that some one told Morelet that the Sierra de Casas was called the Sierra de Cristales, which he misspelled. Poey² gives the habitat of *constellata* as "Sierra de Caballa, esta sierra esta al Sud de la poblacion llamada Nueva-Gerona." This locality is now definitely known as the Sierra de Casas.³

Poey transposed the names of the two mountain ranges in the northern part of the Isle of Pines, referring to the Sierra de Casas by the name of Sierra de Caballa, and to the Sierra de Caballas by the name of Sierra de Casas. Pfeiffer⁴ repeats Morelet's locality of Sierra de Cristales. Arango⁵ in 1878 gives the habitat of *constellata* correctly as "En los paredones de las faldas E. y. O. de la Sierra de Casas situada al O. de Nueva Gerona en Isla de Pinos," probably as a direct result of Gundlach's own collecting. Crosse⁶ repeats the last named habitat.

¹ Morelet: Rev. Zool., p. 144, 1847.

² Poey: Mem. Cuba, I, p. 116, t. 5, fig. 15-17, 1851.

³ Todd: Ann. Carnegie Mus., vol. X, pl. XXVII.

⁴ Pfeiffer: Mon. Pneum., I, p. 334, 1852.

⁵ Arango: Contribucion a la Fauna Malacologica Cubana, p. 45, 1878.

⁶ Crosse: J. de Conch., vol. 38, p. 310, 1890.

The true habitat of *Priotrochatella constellata* is the northern portion of the Sierra de Casas, that of *P. stellata* the Sierra de Caballos and possibly in its northern extension now called the Sierra de Columbus. I do not know of any records of either species being found on the opposite side of the river from its true habitat. Due to the fact that *P. torrei* does not possess a rapidly descending ultimate whorl, as in *P. constellata*, therefore lacking that species' pagoda-form appearance, one would be inclined to suppose that it is most closely related to *P. stellata*, in spite of its habitat in that region theoretically occupied only by *P. constellata*. Admitting as a possible premise that *P. constellata* and *P. stellata* are derivatives of a common ancestor; that due to separation on opposite sides of the river Sierra de Casas, the two species have assumed characters rendering them specifically distinct, there are then several possible explanations of the origin of *P. torrei*. 1. A direct descent from the original *Priotrochatella* stock isolated by geographical change in its own particular habitat at approximately the same period as *P. constellata* and *P. stellata*. 2. A more recent geographical separation from either *P. stellata* or *P. constellata*. In an attempt to throw some light on this question I have examined the radulae of three specimens of each of the three species of *Priotrochatella*. That too much stress must not be placed on the value of the radula as an important character in deciding specific values has been repeatedly demonstrated. I nevertheless believe that sufficient differences appear in the radulae of the species mentioned to furnish some foundation for my belief that *P. torrei*, in spite of its outward similarity to *stellata*, is probably more closely related to *constellata*.

The name *Priotrochatella* was given as a subgenus by Crosse⁷ to those species of *Eutrochatella* possessing an operculum similar to that of *constellata*. Wagner⁸ raises *Priotrochatella* to a genus and includes the species *constellata* Mor. and *stellata* Vel. As far as I know no figures of the radulae of *Priotrochatella* have been published.

⁷ Crosse: J. de Conch., vol. 41, p. 88, 1893.

⁸ Wagner: Denkschriften Akad. Wissenschaften. Band LXXVII, p. 369, 1905.

The radula of *P. torrei* is approximately 14.5 mm. long, and 1 mm. wide, and contains in the vicinity of 250 rows of teeth. The central tooth and the four laterals on each side are perpendicular to the long axis of the radula, the rest of the row comprised of approximately 100 uncini, curves back toward the posterior end of the radula. The central tooth (pl. 4, fig. 1, c.) has a very slight cusp at its summit. The laterals (i, ii, iii) possess very strong cusps which are not denticulate. The major lateral (iv) cannot be described as denticulate, the cutting edge being merely slightly sinuous. In this respect the radula of *Priotrochatella* differs from that of any of the other Helicinidae. If this major lateral is composed of two teeth, they are so firmly interlocked that I have been unable to separate them. The uncini (Fig. 1, u) (Fig. 2) are numerous and densely packed. The innermost (1, 2) are simple, possessing but one cutting edge, later (38, 39) becoming bidentate. In the 45th (45) tooth of the radula figured, the inner denticle is again divided, and the increase in the number of denticles continues to about the 98th row where the cusp is twelve-denticled. The curve of the outer edge of the radula causes the cutting edge of the outermost uncini to be turned inward toward the center of the radula and parallel to its long axis. The three or four outermost uncini are very broad flat plates and the denticles entirely disappear.

The radulae of *P. constellata* and *P. stellata* are very similar to that of *torrei* excepting in the central teeth. In *P. stellata* (Fig. 4) the central tooth is large, with a very strong broad cusp. In *P. constellata* (Fig. 3) and in *P. torrei* the central teeth are very similar in size, differing only in the shape of a very small cusp. There do not seem to be any constant differences in the radulae of the *Priotrochatella* excepting in the central teeth.

Summary (1). The radulae of the three species of *Priotrochatella* exhibit sufficient differences in structure from other groups of Helicinidae to sustain the raising of *Priotrochatella* to generic rank.

Summary (2). The similarity of the radula of *P. torrei* to that of *P. constellata* is of sufficient importance to lend consider-

able weight to a theory that *P. torrei* is more closely related to *P. constellata* than to *P. stellata*.

EXPLANATION OF FIGURES, PLATE 4.

All figures were drawn with the aid of a camera lucida.

Fig. 1. *P. torrei*: c. central; i, iv laterals; u. uncini.

Fig. 2. Uncini 1 and 2, 38 and 39, 45, 55, 70, 90, 102 (the outermost).

Fig. 3. Central tooth of *P. constellata*.

Fig. 4. Central tooth of *P. stellata*.

Figs. 5, 6, shell of *P. torrei*.

LAMPSILIS VENTRICOSA COHONGORONTA IN THE POTOMAC VALLEY.

BY WM. B. MARSHALL.

In the NAUTILUS for October, 1917, I recorded the finding of two valves (belonging to the same individual) of this shell by Manly D. Barber in the Potomac River, at Great Falls, Maryland, about eighteen miles above Washington, D. C. Dr. Ortman had already recorded the finding of a single specimen as far south as the Shenandoah River, at Harper's Ferry, W. Va., some fifty miles above Great Falls, and the finding of others at places farther up the river.

On July 7, 1918, Dr. C. Wythe Cooke of the U. S. Geological Survey, found a superb specimen living in a sandy pass at Midriver Island, which is only about a mile and a half above the Falls.

On July 28, 1918, he and I donned bathing suits and made a careful examination of the spot in the hope of finding more specimens, and especially the very young. For two or three hours we explored the sand and the mud beneath with our fingers and toes and passed quantities of sand and mud through our hands and through a fine mesh sieve. The spot thus investigated was about 20 feet wide and 75 feet long. Our efforts were rewarded by the finding of four specimens of *cohongoronta*, the smallest having a length of 40 mm., the largest a length of